

Species Status Assessment

Common Name	highland rush	Date Updated:	2024-01-31
Scientific Name	<i>Oreojuncus trifidus</i>	Updated By:	Rachael A. Renzi
Family	Juncaceae		

Species Synopsis *(a short paragraph which describes species taxonomy, distribution, recent trends, and habitat in New York):*

Highland rush (*Oreojuncus trifidus*), also called arctic rush, is a perennial graminoid in the rush family. It is the only species in its genus in New York (Werier et al. 2023). Its distribution is circumboreal, occurring from Europe west to North America, where it grows from Greenland south along the Appalachians into NY, then south to NC. It is considered rare along the eastern US, being ranked at S3 or lower in each state (NatureServe 2023). It generally occupies granitic or anorthosite bedrock outcrops and crevices at high elevations, though has been found in calcareous substrate in the Green Mountains of Vermont (NYNHP 2024, Schori 2004). In New York, *Oreojuncus trifidus* occupies alpine outcrops and alpine meadows in the Adirondack High Peaks region, as well as on sandy substrate or cliffs in the Shawangunk Mountains (NYNHP 2023, 2024). There are currently twelve extant populations, but seven have less than 50 genets each (NYNHP 2023). The total number of plants in NY is unknown, but there are likely less than 1,000 genets total (NYNHP 2023). In addition to its rarity, populations may be threatened by trampling (NYNHP 2024). More surveys are needed to determine the stability of the populations throughout NY.

I. Status

a. Current legal protected Status

i. Federal:		Candidate:
ii. New York:	<u>Threatened</u>	

b. Natural Heritage Program

i. Global:	<u>G5</u>		
ii. New York:	<u>S2</u>	Tracked by NYNHP?	On Active Tracking List

Other Ranks:

COSEWIC: Not listed in Canada
IUCN Red List: Not assessed by IUCN Red List

Status Discussion:

Oreojuncus trifidus is Endangered in New York (NYNHP 2023). There are twelve known extant populations in the state; ten are in the Adirondacks and two are in the Shawangunk Mountains (NYNHP 2023). Seven populations are very small, with fewer than 50 plants each (NYNHP 2023). There are also three or four historical populations which have not been seen in over 35 years (NYNHP 2023). One of these populations is likely extirpated. Survey work is needed to determine whether the other historical populations have become extirpated as well. Though *Oreojuncus trifidus* was previously placed in the genus *Juncus*, recent molecular study found it a distinct genus (Záveská Drábková & Kirschner 2013).

II. Abundance and Distribution

Region	Present?	Abundance	Distribution	Time Frame	Listing status or S-Rank	SGCN?
North America	Yes	Unknown	Unknown	Unknown		
Northeastern US	Yes	Unknown	Unknown	Unknown		
New York	Yes	Unknown	Unknown	Unknown	T	
Connecticut	No	-	-	-		
Massachusetts	No	-	-	-		
New Jersey	No	-	-	-		
Pennsylvania	Yes	Unknown	Unknown	Unknown	SH	
Vermont	Yes	Unknown	Unknown	Unknown	S1	
Ontario	No	-	-	-		
Quebec	No	-	-	-		

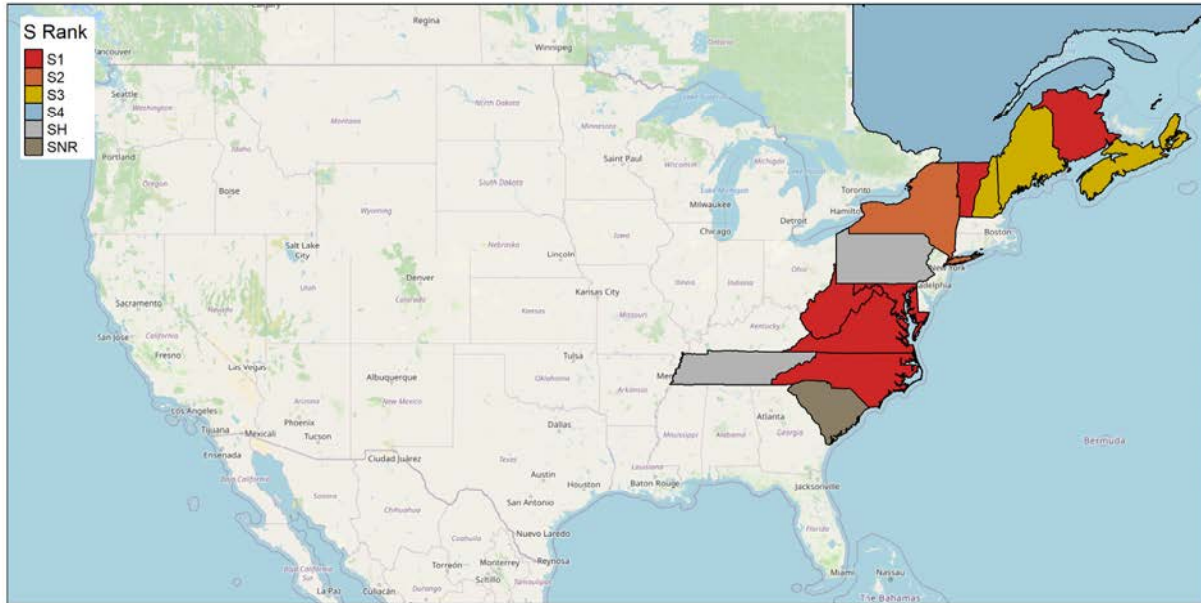


Figure 1. *Oreojuncus trifidus* North American distribution.

Percent of North American Range in NY	Classification of NY Range	Distance to core population, if not in NY
1-25%	Peripheral	6,000km

III. NY Rarity and Trends

Trends Discussion

Five of the known extant populations in NY were first discovered within the past 40 years. It is likely that these are not new populations but rather were overlooked in the past. Seven populations have fewer than 50 plants, but clear trends at these and other populations are unknown. There are three or four populations that have not been seen in over 35 years, but survey work is needed to determine if they have become extirpated. (NYNHP 2023, 2024).

Details of historic and current occurrence

In New York, *Oreojuncus trifidus* is restricted to the High Peaks region of the Adirondacks and the Shawangunk Mountains in the southeastern part of the state. Based on the most recent survey counts, less than 1000 genets likely occur in NY. However, more thorough counts are needed as complete surveys for most of the sites have not been carried out since 2013 or earlier. The plant is generally rare in North America, but also occurs in mountainous regions of Europe. It is ranked by NatureServe (2023) as being globally secure. In North America, *Oreojuncus trifidus* grows from Greenland and northern Quebec south to the high mountains of northern New England and the Adirondacks, in the Shawangunk Mountains in southeastern New York, and disjunct to the highest mountains of the southeastern United States: West Virginia, Virginia, Maryland, and North Carolina (NYNHP 2024; Brooks and Clemants 2000; Weakley 2020).

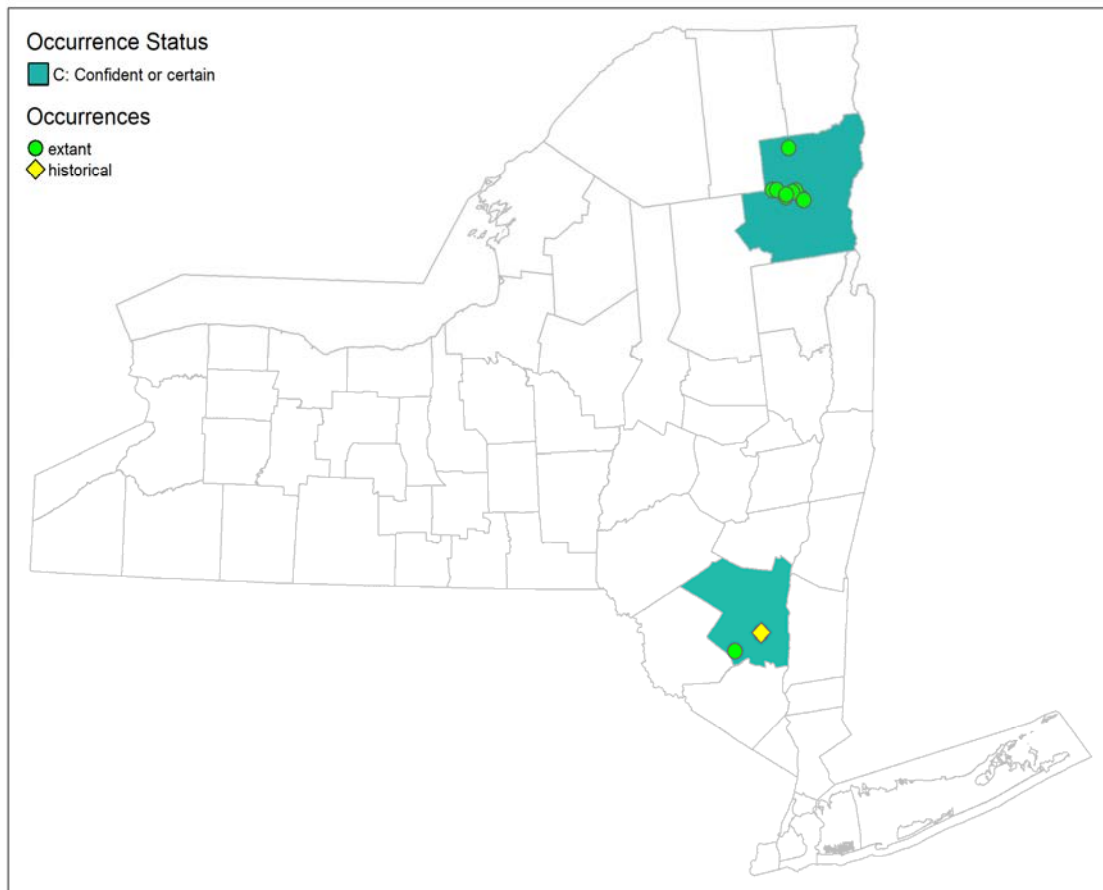


Figure 2. NYS distribution for *Oreojuncus trifidus*.

Table 1. Number of records (element occurrences) of *Oreojuncus trifidus* grouped by the dates known to be extant (the years spanning first observation to last observation) and the number and percent of total of USGS 7.5 minute map quadrangles these observations fall within for New York State.

Years	# of Records	# of distinct quads	% of quads in State
Pre-1995	8	6	0.6
1995-2004	7	6	0.6
2005-2014	6	7	0.7
2015-2023	2	2	0.2

Monitoring in New York

One of the populations occurs on State Park land, which is surveyed on a 10-year rotation. Nine populations are located within designated wilderness land within the Adirondack Park. Some of these are surveyed by a summit steward botanist every 6-7 years. One is located on a ski mountain in the Adirondacks. Another is on privately owned preserve land. These populations are not regularly monitored but seven populations have been visited since 2006 (NYNHP 2023).

IV. Primary Habitat or Community Type (from NY crosswalk of NE Aquatic, Marine, or Terrestrial Habitat Classification Systems):

Northeastern Habitat Classification Macrogroups: Cliff and talus, Alpine.

NY Ecological Communities: Cliff community, Open alpine community (Edinger et al. 2014, NYNHP 2023).

Habitat or Community Type Trend in New York

Declining:	Stable:	Increasing:	Unknown: ✓
Time Frame of Decline/Increase:			
Habitat Specialist	Yes: ✓	No:	

Habitat Discussion:

In New York, *Oreojuncus trifidus* often grows in thin soil over granitic or anorthosite bedrock. In the Adirondacks the plants are mostly restricted to high elevation sites, growing in cracks in rocky outcrops, ledges in cool microsites, and rocky alpine meadows, though they can occur on slightly lower elevations in exposed cliff outcrops and ledges (NYNHP 2023, 2024; Gleason and Cronquist 1991). In the Shawangunk Mountains, this species grows on vertical cliffs and ledges of conglomerate bedrock as well as on a sandy lake shore (NYNHP 2023, 2024). Clemants (1990) describes the habitat in NY as dry, granitic conglomerate or quartzite ledges, but also as occurring on dry barrens and sands.

Throughout North America, *O. trifidus* occurs from the arctic region south to the acid, sterile, rocky, or sandy barrens and mountains of Newfoundland and bare mountains of Quebec, northern New England, and northern New York. It is described as occupying dry cliffs and crests of central New Hampshire to eastern New York and south, though disjunct, to the mountains of North Carolina (Fernald 1970). Throughout the Appalachians, it occurs mostly in crevices of granitic (schistose) cliffs or rubble slopes in the higher regions (Brooks and Clemants 2000). Hämet-Ahti (1980) notes that the plants occupy forested zones of non-arctic mountains in southern U.S. states, but generally occur above the timberline in northern states. In these regions, *O. trifidus* generally tends to occur on schistose substrates, yet in Europe, it prefers limestone areas (Hämet-Ahti 1980).

V. Species Demographics and Life History (include information about species life span, reproductive longevity, reproductive capacity, age to maturity, and ability to disperse and colonize):

Oreojuncus trifidus is a tufted perennial graminoid. It is mostly composed of fine rounded stems 10-40 cm tall. There are between 1-3 small flowers at the top of the stem. The flowers develop into capsules 2.2-3.5 mm long, which at maturity open to reveal brown seeds 0.9-1.3 mm long (Brooks and Clemants 2000). These seeds are likely dispersed by wind and water. The plant can reproduce sexually through flowers and vegetatively by forming tufts, though its ability to spread by colonization is limited (Schori 2004).

Figure 2. Phenology of *Oreojuncus trifidus* in New York State (NYNHP 2023).

Phenology	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Fruiting												

VI. Threats

At a few populations in NY, individual plants and habitat are threatened by hiking (NYNHP 2023, 2024). One population in a cliff crevice is bisected by a trail (NYNHP 2023, 2024). The Summit Steward program, which works to inform hikers of the fragile nature of alpine plants, is a critical program which is helping to reduce trampling of alpine vegetation. This program and other efforts designed to reduce trampling of alpine meadows are needed. In addition, global warming may have negative long-term effects on the alpine habitat where *Oreojuncus trifidus* grows.

Are there regulatory mechanisms that protect the species or its habitat in New York?

Yes:

No:



Unknown:

If yes, describe mechanism and whether adequate to protect species/habitat:

Describe knowledge of management/conservation actions that are needed for recovery/conservation, or to eliminate, minimize, or compensate for the identified threats:

Efforts to reduce trampling in alpine meadows are needed.

Complete Conservation Actions table using IUCN conservation actions taxonomy at link below. Use headings 1-6 for Action Category (e.g., Land/Water Protection) and associated subcategories for Action (e.g., Site/Area Protection) -

<https://www.iucnredlist.org/resources/conservation-actions-classification-scheme>

Table 3. Recommended conservation actions for *Oreojuncus trifidus*.

Conservation Actions	
Action Category	Action
Land/water protection	1.1. Site/area protection
Land/water protection	1.2. Resource & habitat protection
Land/water management	2.1. Site/area management
Land/water management	2.2. Invasive/problematic species control
Land/water management	2.3. Habitat & natural process restoration

VII. References

This SSA drew heavily from these resources:

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